commenting on certain alleged facts quoted in an ethnological article in *Cassell's Popular Educator*, from Dr. Theodor Waitz's "Introduction to Anthropology," translated by Mr. Collingwood. Mr. Field justly remarks that facts of such a character, "if substantiated, would introduce *Accidental Distortion* as a co-worker with Natural Selection in the modification of species." But he puts the question—"Do these stories rest on a good foundation?" Personally, I do not know. All I can say is, that Dr. Waitz, whose scientific authority is unimpeachable, published them without expressing any doubts of their accuracy. They may be found with some alleged facts of analogous character, at pp. 83 to 85 of his first volume, as translated by Mr. Collingwood. Speaking of animals, he says:—

"Mutilations also are sometimes transmitted. Williamson[*] saw in Carolina dogs which have been deficient in tails for three or four generations, in consequence of one of their ancestors having accidentally lost it. A cow, three years old, which had lost by suppuration her left horn, produced three calves, which, instead of the left horn, presented only a small protuberance on the skin. Dogs and horses whose tails or ears are clipped, as the draught dogs in Kamtschatka, often transmit these deficiencies to their offspring." (p. 83.)

Referring next to man, he considers that there are "cases in which deformities have shown themselves hereditary" (p. 84.) He says:—

"Instances of hereditary blindness and deafness, and of alternating dumbness, so that every second or third child was deaf, are given by Lucas. Harris communicates a case of hereditary blindness in one eye, and of a double thumb on the right hand."

I omit other instances. He continues again:—

"Instances are not wanting of mutilations that have been transmitted from parents to children; such, however, occur less frequently. According to Blumenbach, the children of an officer, whose little finger had been cut across and become crooked, possessed an analogous defect. Gosse cites the case of an officer wounded in the battle of Eylau, who transmitted to his offspring a scar on the forehead. Other instances of hereditary deformities are found in Wagner" (p. 85).

As Waitz, it will be perceived, quotes Blumenbach, it may be mentioned that the last-named author has a paragraph headed, "Problem proposed. Can mutilations and other artifices give commencement of native varieties of animals?" After showing that some have answered the question in the affirmative and others in the negative, he adds, "I have not at present adopted as my own either the affirmative or negative of these opinions." See p. 203 of his Anthropological Treatises, translated by Mr. Bendyside.

New facts, capable of being severely tested, would be of great value.

THE WRITER OF THE ETHNOLOGICAL PAPERS
IN "CASSELL'S POPULAR EDUCATOR"

The Stability of Turret Ships

SINCE the loss of the *Captain* an opinion has rapidly gained ground, not only amongst unscientific men, but even amongst those who from their education should have acquired some of the most simple laws of statics, that that noble ship toppled over on account of her being "top-heavy"—that the *Captain*, an armour-plated ship with a low freeboard, was more "top-heavy" than a broadside ship, with more than twice as much out of water! The fact is, that her weights were lower and not higher than those of other vessels, and therefore that her fault was not "top-heaviness."

In looking at the stability of a vessel we take two points—the "centre of gravity" and the "centre of buoyancy;" the former being a certain point at which, if the attraction of gravity impressed a single force equal in intensity to the sum of all its separate actions on the component parts of the body, the ultimate effect would be the same as it is under the system of separate actions which really exists. The latter is the centre of gravity of the volume of water displaced by the ship, and may be regarded as the pivot on which she would turn on heeling over. The vessel being in a vertical position, the centre of gravity is immediately over the centre of buoyancy, and she is in a state of unstable equilibrium, *i.e.* she is in the same fix as a walking-stick standing on end. So far in favour of "top-heaviness."

Suppose now that she heels over to one side, what will the effect on our centres be? Immediately she begins to heel over the centre of buoyancy travels outwards to the side towards which she heels, and the centre of gravity being fixed, there will come a point when it will exert a force to overcome the heeling over pressure. This travelling outwards of the centre of buoyancy depends wholly on the shape of the vessel, and will appear perfectly plain by drawing sketches of a ship lying at different angles. The more a vessel heels over, the further outwards does the centre of buoyancy travel, and the greater is the resistance offered to the heeling over pressure until she approaches a certain point, then the centre of buoyancy moves out at an increasingly slower rate, and finally reaches the position corresponding to that of her maximum statical stability.

Before this, if by any disturbing cause, such as the alteration of the wave slope, the ship were inclined beyond her position of maximum stability, the resistance to heeling would become less the farther she went, until she reached a position at which her moment of stability would be the same as before the disturbing force began to act. And in this position she would remain in unstable equilibrium if the disturbing forces were removed. But if she should pass this position before the disturbing forces, and the angular velocity caused by them, cease, the ordinary movement of the heeling over force would then be greater than the resistance offered by the stability, in any position through which she would pass, and she would be turned over.

Now the difference between a high and a low freeboard ship as regards stability under sail is this:—The position of maximum stability is reached soon after the immersion of the edge of the deck; and as a high freeboard ship does not immerse her deck until she has attained a large inclination, while a ship of low freeboard will immerse hers at a very much less angle, it follows that, in the latter case, the position of maximum stability and then of unstable equilibrium is reached at a comparatively small angle of heel, and a ship of this construction is much more likely to be capsized than one with a high freeboard. Of course, in a low-sided ship, the centre of gravity may be brought so low as always to be on the right side of the centre of buoyancy, but this is not practicable in an armour-plated turret ship.

From what we have here stated it will be seen that the error in design that made the *Captain* so much heavier than was expected, and draw six feet instead of eight, was not adding so much to her stability but was in reality lessening it, and, perhaps, was the cause of her loss; and that if we are to have armour-plated turret ships, they must either be built of low freeboard, to be propelled by steam alone, or of high freeboard sufficient to give stability for sails.

The feud between naval architects and the advocates of the turret system has been going on for ten years back—the former contending that a high side was necessary in a rigged sailing ship, and the latter, that if they put their guns in turrets, they could have low-sided ships, or, in fact, ships with no sides at all, after a certain amount of inclination.

That the loss of the *Captain* has resulted from a preventible cause is quite evident, and we have shown what that cause is; it, therefore, only remains that if we are to have sailing turret ships, we must have high freeboard for the sake of stability.

T. BELL LIGHTFOOT

Newcastle-upon-Tyne

The New Postal Act

AT page 474 Mr. Reeks complains as to the working of the new Postal Act. It seems intended to obliterate the old parcel post. He says, "Herbarium specimens are not excluded." Perhaps so; but they are not included. The provisions of the new Act are limited to books, written and printed matter, genuine trade samples and patterns, so far as regards the two ounces for a halfpenny. All parcels other than books, &c., as described above, go at the letter rate of one penny for each half-ounce.

The postal card is the thin end of the wedge that will hereafter open to us a regular letter rate of a quarter of an ounce for a halfpenny. For instance: we may now send ordinary business communications up to two ounces, thus embodying the matter of twenty postal cards, for the halfpenny, if folded in a paper wrapper. An ordinary business communication of half-ounce weight goes for the halfpenny, if folded as a letter but left unsealed.

I ask, If Government will now take an open letter for a halfpenny, why not take it closed at the same rate? Common sense

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[*] More specific reference to the authorities on which Waitz rested may be found in the foot-notes to his work. Some of the volumes he quotes are foreign, and not to be found in the British Museum Library.

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will hereafter equalise this disparity. The parcel post, however, is at present discontinued.

P. N. Row

October 14

Science and the Government

THE reason that the Government has refused to aid "the expedition to observe the approaching eclipse" is, that it is perfectly assured that "men of science and culture" are nothing but a set of lying impostors, and would swindle the public out of thousands of pounds to take an observation which might be done for 10*l.* and much less. The nation is fast beginning to perceive that astronomy is a monstrous cheat—and the Transit of Venus has no more to do with the distance of the sun than it has with the number of fingers on my hand.

JOHN HAMPDEN

[We congratulate Mr. Lowe on his ally, merely remarking that the same Government which has refused the Eclipse Expedition has granted 20,000*l.* for observations of the Transit of Venus. Perhaps Mr. Hampden can explain the cause of this inconsistency on the part of the Government.—ED.]

Insects upon a Swallow

G. H. H. mentions in NATURE of Sept. 22 his having found on a swallow in the month of August two slate-coloured insects. On the 15th of July last, when hauling a seine net in Studland Bay, near Poole, with some fellow members of the Linnean Society Club, I picked up at the foot of the low cliff a young sand-martin, which had seven of these parasites (*Ixodes plumbea*) affixed to the skin of the head, giving it the appearance of having a slate-coloured fleshy crest. The poor little bird exhibited the symptoms described by your correspondent. I found it panting and apparently exhausted on the ground, and it remained stationary without making any effort to escape. The fishermen of our crew informed me that they often pick up martins with these ticks adhering to them.

The Waldrons, Croydon, Sept. 26 HENRY LEE

Aurora Borealis

A FINE aurora was observed here on the evening of the 14th inst., between 8ʰ 30ᵐ and 9ʰ 40ᵐ, which, in spite of bright moonlight, nearly equalled the splendour the display of September the 24th. During the early part of the evening the eastern quarter of the sky was covered with bands of light *cirri*, which had a general direction of E.N.E. to W.S.W., or nearly at right-angles to the magnetic meridian; it was among these clouds and in the N.E. that the beams of the aurora were first seen. At $9^h\,0^m$ a magnificent rose-coloured ray was noticed in the N.N.W., extending from the horizon through *Vega* towards the zenith. The three stars, ζ, ϵ, and δ, of Ursa Major were for more than ten minutes enveloped in the crimson glow of the aurora.

Bedford, Oct. 18 THOS. G. ELGER

NOTES

WE are glad to be able to state that Dr. Wyville Thomson has entirely recovered from the attack of gastric fever which prevented his taking part in the *Porcupine* expedition this summer. He is at present going over the zoological collection brought home in that vessel, at the University of London, with Dr. Carpenter, and he reports some very remarkable additions to his new group of vitreous sponges, mainly from the coast of Spain and Portugal. These, with some others procured by Mr. Saville Kent, in Dr. Marshall Hall's yacht, will nearly double the number of known forms referred to the order. They are no pigmies. One of them forms a lovely lace-like vase upwards of three feet in diameter at the lip!

WE have to add to the list of candidates for the Regius Professorship of Natural History in Edinburgh the name of John Anderson, M.D. Edin., F.L.S., director of the Imperial Museum of Natural History, Calcutta. Dr. Anderson was attached as Naturalist to a recent expedition through the north of Burmah, and he is, we understand, now on his way home, bringing with him detailed accounts of the important additions which he is known to have made to science in that expedition.

MEMBERS of the University of Cambridge, and all who are interested in the study of physical science, will hear with pleasure of the munificent offer made to the University by its Chancellor, the Duke of Devonshire, contained in the following extract of a letter to the Vice-Chancellor:—"I find in the report, dated Feb. 29, 1869, (*sic*) of the Physical Science Syndicate, recommending the establishment of a Professor and Demonstrator of Experimental Physics, that the buildings and apparatus required for this department of science are estimated to cost 6,300*l.* I am desirous to assist the University in carrying this recommendation into effect, and shall accordingly be prepared to provide the funds required for the building and apparatus, so soon as the University shall have in other respects completed its arrangements for teaching experimental physics, and shall have approved the plan of the building."

AT the Commencement held on the 12th inst. of the Queen's University in Ireland, the Most Honourable the Marquis of Kildare, the newly-appointed Chancellor of the University, presided. After expressing the deep regret of the University at the death of their first Chancellor, the Earl of Clarendon, to whom the University and Colleges were indebted for much of their prosperity, the Chancellor mentioned that the Senate had decided to establish a special curriculum, in which science should have the predominance, and that the degrees of Bachelor and Doctor in Science would be given to those who passed the examinations in the subjects to be hereafter enumerated. He also referred to the examinations for women carried on by the University—the first of these was held in June last in Belfast and Galway—and mentioned that of thirty-three candidates who presented themselves, twenty-one acquitted themselves to the satisfaction of the examiners.

MR. M. R. PRYOR has been elected to a Fellowship of Natural Science in Trinity College, Cambridge. The examination was conducted by Prof. Liveing, Prof. Michael Foster (the new Prælector of the College), Mr. Trotter, and Mr. Hort, Fellows of the College, was open to all the University, and was on a par with the examinations in classics and mathematics, held at the same time for Fellowships. It is the first occasion that this has been done, and the first time that a Fellowship has been offered in Cambridge for competition in Natural Science. We sincerely trust the plan will be continued in Trinity, and that the example will be followed in other Colleges. It would probably contribute more than any other single thing to promote the study of Natural Science in the University, and give an impetus to it in the various schools throughout the kingdom. We sometimes think the Colleges are scarcely conscious of the power they are capable of exercising in this way, and of the responsibility which necessarily attaches to such power. The questions were of a very high order, and we understand the answers evinced so much power as well as knowledge, that the examiners would gladly have elected more than one candidate. We sincerely congratulate Mr. Pryor on having thus worthily won the highest competitive reward for Natural Science hitherto given in this country.

THE Senate of the Queen's University in Ireland has conferred on William King, M.D., Professor of Geology and Mineralogy in Queen's College, Galway, the honorary degree of Doctor of Science, in consideration of his eminence as a geologist.

THE following lectures in Natural Sciences will be delivered in Trinity and St. John's Colleges, Cambridge, during the Michaelmas term, 1870. On Electricity: Mr. Trotter, Trinity. On Chemistry: Mr. Main, St. John's. Instruction in Practical Chemistry will also be given. On Geology—(1) Palæontology; (2) Lyell's Principles of Geology; (3) Elementary Lectures: Mr. Bonney, St. John's. (Students of other Colleges can be admitted to these Lectures by arrangement with their college

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